

## WHAT IS CLAIMED IS:

1. A method for separating insoluble contaminants from an aqueous ST protein suspension, containing soluble somatotropin monomer, comprising:

5 a) adding to the ST protein suspension an anionic polymer in an amount and under conditions effective to cause the flocculation of the insoluble contaminants, and

b) separating the flocculated insoluble contaminants from the supernatant containing soluble somatotropin monomer.

2. The method of claim 1, wherein the anionic polymer is a polyacrylamide.

10 3. The method of claim 1, wherein the anionic polymer has a polymer charge density between about 5% and about 12%.

4. The method of claim 1, wherein the anionic polymer has a polymer charge density between about 8% and about 11%.

5. The method of claim 1, wherein the anionic polymer's average molecular weight is greater than about 100,000

15 6. The method of claim 1, wherein the anionic polymer's average molecular weight is greater than about 1,000,000.

7. The method of claim 1, wherein the anionic polymer's average molecular weight is greater than about 10,000,000.

20 8. The method of claim 2, wherein the anionic polymer has a polymer charge density between about 5% and about 12% and an average molecular weight greater than about 10,000,000.

9. The method of claim 1, wherein the anionic polymer is a polysaccharide.

10. The method of claim 9, wherein the polysaccharide is starch or modified cellulose.

11. The method of claim 9, wherein the polysaccharide is potato starch.
12. The method of claim 1, wherein the anionic polymer is present in the ST protein suspension at a concentration between about 1 and about 1000 ppm.
13. The method of claim 1, wherein the anionic polymer is present in the ST protein suspension at a concentration between about 10 and about 100 ppm.
14. The method of claim 1, wherein the anionic polymer is present in the ST protein suspension at a concentration between about 20 and about 30 ppm.
15. The method of claim 1, wherein the pH of the ST protein suspension is between about 4.0 and about 6.5.
16. The method of claim 1, wherein the somatotropin monomer is bovine somatotropin monomer.
17. The method of claim 1, wherein the flocculated contaminants are separated from the soluble somatotropin monomer by centrifugation, filtration, sedimentation, or combinations thereof.
18. The method of claim 1, wherein the ST protein suspension has a pH between about 4 and about 5 and wherein the anionic polymer is a polyacrylamide present in an amount from about 1 ppm to about 100 ppm having a polymer charge density from about 5% to about 12% and an average molecular weight greater than about 1,000,000.
19. A method for the recovery of somatotropin monomer which comprises:
  - a) obtaining a mixture of somatotropin proteins comprising somatotropin monomer and somatotropin oligomer in aqueous solution at a pH greater than about 7;
  - b) producing an ST protein suspension containing soluble somatotropin monomer by precipitating a major portion of the somatotropin oligomer from the solution while

maintaining a major portion of somatotropin monomer in solution by reducing the pH of the solution to less than about 6.5;

c) adding to the ST protein suspension an anionic polymer in an amount and under conditions effective to cause the flocculation of the precipitated proteins;

5 d) separating the flocculated material from the solution of somatotropin monomer; and

e) recovering the somatotropin monomer solution.

20. The method of claim 19, wherein the anionic polymer is a polyacrylamide.

21. The method of claim 19, wherein the anionic polymer has a polymer charge density between about 5% and about 12%.

10 22. The method of claim 19, wherein the anionic polymer has a polymer charge density between about 8% and about 11%.

23. The method of claim 19, wherein the anionic polymer's average molecular weight is greater than about 100,000

15 24. The method of claim 19, wherein the anionic polymer's average molecular weight is greater than about 1,000,000.

25. The method of claim 19, wherein the anionic polymer's average molecular weight is greater than about 10,000,000.

20 26. The method of claim 19, wherein the anionic polymer has a polymer charge density between about 5% and about 12% and an average molecular weight greater than about 10,000,000.

27. The method of claim 19, wherein the anionic polymer is a polysaccharide.

28. The method of claim 27, wherein the polysaccharide is starch or modified cellulose.

29. The method of claim 27, wherein the polysaccharide is potato starch.

30. The method of claim 19, wherein the anionic polymer is present in the ST protein suspension at a concentration between about 1 and about 1000 ppm.
31. The method of claim 19, wherein the anionic polymer is present in the ST protein suspension at a concentration between about 10 and about 100 ppm.
- 5 32. The method of claim 19, wherein the anionic polymer is present in the ST protein suspension at a concentration between about 20 and about 30 ppm.
33. The method of claim 19, wherein the somatotropin is bovine somatotropin.
34. The method of claim 19, wherein the flocculated material is separated from the soluble somatotropin monomer by centrifugation, filtration, sedimentation, or combinations thereof.
- 10 35. The method of claim 19, wherein the pH of the ST protein suspension is between about 4 and about 5 and wherein the anionic polymer is a polyacrylamide present in an amount from about 1 to about 100 ppm, having a polymer charge density from about 5% to about 12% and an average molecular weight greater than about 1,000,000.
- 15 36. An aqueous ST protein suspension comprising somatotropin monomers, somatotropin oligomers, and an anionic polymer.
37. The ST protein suspension of claim 36, wherein the anionic polymer is a polyacrylamide.
38. The ST protein suspension of claim 37, wherein the polyacrylamide has a polymer charge density between about 5% and about 12%.
- 20 39. The ST protein suspension of claim 37, wherein the polyacrylamide has a polymer charge density between about 8% and about 11%.
40. The ST protein suspension of claim 36, wherein the anionic polymer is a polysaccharide.
41. The ST protein suspension of claim 40, wherein the anionic polymer is starch or modified cellulose.

42. The ST protein suspension of claim 40, wherein the polysaccharide is potato starch.
43. The ST protein suspension of claim 36, wherein the anionic polymer is present in the suspension at a concentration between about 1 and about 1000 ppm.
44. The ST protein suspension of claim 36, wherein the anionic polymer is present in the suspension at a concentration between about 10 and about 100 ppm.
45. The ST protein suspension of claim 36, wherein the anionic polymer is present in the suspension at a concentration between about 20 and about 30 ppm.
46. The ST protein suspension of claim 36, wherein the anionic polymer's average molecular weight is greater than about 100,000.
47. The ST protein suspension of claim 36, wherein the anionic polymer's average molecular weight is greater than about 1,000,000.
48. The ST protein suspension of claim 36, wherein the anionic polymer's average molecular weight is greater than about 10,000,000.
49. The ST protein suspension of claim 36, wherein the anionic polymer has a polymer charge density between about 5% and about 12% and an average molecular weight greater than about 10,000,000.
50. The ST protein suspension of claim 36, wherein the somatotropin is bovine somatotropin.
51. The ST protein suspension of claim 36, wherein the anionic polymer is a polyacrylamide present in an amount from about 1 to about 100 ppm having a polymer charge density from about 5% to about 12% and an average molecular weight greater than about 1,000,000.
52. The ST protein suspension of claim 36, wherein the pH of the protein suspension is about 4.5, and the anionic polymer is a polyacrylamide present in an amount of about 25 ppm, having a charge density of about 10%, and an average molecular weight of about 16,000,000.